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ABSTRACT

This is a case study of curriculum and pedagogy used to integrate academic and occupational education in the community college. The study investigated classroom practices, views of integrated instruction on the part of staff and students, and professional development approaches. Thirty-three integrated classrooms in seven community colleges in four states were studied. Instruction was integrated either through linking courses or infusing academic or occupational instruction in single courses. Two-thirds of the instructors applied a strong form of integration, and the majority of instructors combined teacher- and student-centered methods, contrary to the expectation that integrated instruction would primarily be student-centered. College faculty and administrators were highly concerned about students' need for improved academic skills, suggesting an overlap with the purposes of remedial education. At the same time, little explicit instruction in literacy or critical thinking skills was observed in occupational classrooms. A strong program of professional development combined with the support of senior administrators promoted sustainability. Several approaches to staff development had the potential to overcome faculty resistance to integrated instruction. Finally, despite much enthusiasm for academic-occupational integration, the study sites had almost no empirical evidence to offer. If integrated instruction is to be evaluated, it will be necessary to disentangle its effects from those of other good practices that tend to accompany it. Contains 70 references. (Author)

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Curriculum and Pedagogy to Integrate Occupational and Academic Instruction in the Community College: Implications for Faculty Development

Dolores Perin

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Occasional Paper
Community College Research Center
September 1998

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INSTITUTE ON EDUCATION AND THE ECONOMY
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This is a case study of curriculum and pedagogy used to integrate academic and occupational education in the community college. The study investigated classroom practices, views of integrated instruction on the part of staff and students, and professional development approaches. Thirty-three integrated classrooms in seven community colleges in four states were studied. Instruction was integrated either through linking courses, or infusing academic or occupational instruction in single courses. Two-thirds of the instructors applied a strong form of integration, and the majority of instructors combined teacher- and student-centered methods, contrary to the expectation that integrated instruction would be primarily student-centered. College faculty and administrators were highly concerned about students' need for improved academic skills, suggesting an overlap with the purposes of remedial education. At the same time, little explicit instruction in literacy or critical thinking skills was observed in occupational classrooms. A strong program of professional development combined with the support of senior administrators promoted sustainability. Several approaches to staff development had the potential to overcome faculty resistance to integrated instruction. Finally, despite much enthusiasm for academic-occupational integration, the study sites had almost no empirical evidence to offer. If integrated instruction is to be evaluated, it will be necessary to disentangle its effects from those of other good practices that tend to accompany it.

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INTRODUCTION

The community college is an important site of education and training for the mid-level workforce in the United States (Dougherty, 1994; Grubb, 1996), and provision of occupational instruction is one of the community college's major functions (Callan, 1997). Large proportions of community college students are recent high school graduates with a history of poor achievement, older students who have been away from formal education, or recent immigrants not fully proficient in the English language. Consequently, many lack the reading, writing, English language, math, and critical thinking skills needed for college-level study (A. M. Cohen & Brawer, 1996; McCabe, 1988; O'Banion, 1994; Richardson & Elliot, 1994).

Community colleges teach academic skills in either courses that usually do not bear college credit or general education courses such as freshman composition (Adelman, 1996; Grubb, 1996; Howard & Obetz, 1996).[1] Although not all colleges mandate remediation (Roueche & Roueche, 1993), it tends to be part and parcel of the ubiquitous open admission policy of U.S. community colleges (McGrath & Spear, 1991) and may be a necessary service if the community college door is to be kept open (Zeitlin & Markus, 1996). However, there is little evidence concerning the effectiveness of remediation (Grubb, 1998; Johnson, 1996), and students who meet criteria for exit from remedial classes may continue to lack the basic skills needed for study in discipline areas (McGrath & Spear, 1991). This problem may disproportionately affect vocational education students, who are often academically underprepared (Foster-Havercamp, 1988).

Traditional academic courses may be less effective for vocational education students, because the content tends to be general rather than focused on career topics. The separation of academic and occupational content may minimize the likelihood of generalization of learning across the two contexts, so that, for example, writing skills developed in freshman composition class may not be applied when a student is asked to write a patient description in an allied health class. Further, given their educational histories and learning styles, vocational education students may not see the value of general education

[1]We are concerned with students who are enrolled, or wish to enroll, in programs leading to a degree or certificate. The basic literacy, ESL, and GED courses taught in continuing education programs are beyond the scope of this study.

(Grubb, Badway, Bell, & Kraskouskas, 1996) and may avoid taking academic courses altogether.

A way around these problems is to integrate occupational and academic education (Badway & Grubb, 1997; Bragg & Layton, 1995). Emanating from Dewey's (1916) philosophy of education, integrated instruction makes academic courses more occupational and occupational education more academic (Stasz et al., 1990). When integrated with vocational education, academic skills can be contextualized in occupational education, as is done in "content area literacy" in secondary education (Bean & Readence, 1989) and "workplace literacy" in job training settings (Mikulecky & Drew, 1991; Perin, 1997; Sauer, 1998). Combining academic and subject matter instruction in the community college may provide a way to increase educational efficiency at a time when funding is becoming scarcer (Callan, 1997).

Academic-occupational integration is the fusion of reading, writing, English language, math, and/or critical thinking skills with career-related instruction. Integration is accomplished by linking or clustering courses, infusing academic instruction into occupational courses or vice versa, or adding components such as authentic assessment, career exploration, and work-based learning to traditional vocational education (Badway & Grubb, 1997). Integrated instruction is not confined to occupational education, nor is it confined to the community college. For example, clustered courses known as learning communities are increasingly common in programs in liberal arts, humanities, social sciences, and sciences, in both community college (Tinto, 1997) and four-year programs (Gabelnick, MacGregor, Matthews, & Smith, 1990).

Integrated instruction has been implemented at the high school level throughout the 1990s, prompted by federal legislation intended to reform vocational education (Bailey & Merritt, 1997). Community colleges have also been moving in this direction (Badway & Grubb, 1997). While remedial education focuses on precollege literacy levels (Shaw, 1997) and much of academic-occupational integration is conducted within courses that bear college credit, both initiatives have in common the intention of raising academic skills. Thus, the purposes of remedial education and academic-occupational integration appear to overlap.

For the community college, academic-occupational integration represents significant change, since these institutions tend to prefer traditional to more innovative formats (Callan, 1997). Integrated instruction promises both curricular and pedagogical reform. Curricular reform is possible through the synthesis of two normally disparate areas, and pedagogical reform occurs when teacher-

centered instruction is replaced with more stimulating student-centered teaching (Achtenhagen & Grubb, 1998; Illinois Task Force on Integration, 1997).

While previous researchers (J. A. Brewer, 1996; Grubb & Kraskouskas, 1992; Illinois Task Force on Integration, 1997) have described a variety of integration models being used in community college vocational education programs, there is little description of implementations at the site level. The current study investigated classroom processes, perceptions, and staff development approaches to integrated instruction in selected community colleges' occupational education programs.

CLASSROOM PROCESSES

Besides differences among models, variation would be expected in the ways in which specific instructors apply the same model. Academic and occupational material can be related to each other superficially or closely. "Treatment quality" may vary, so that integrated instruction could be implemented along a spectrum from mechanical linking to close interweaving of academic and occupational topics. Mechanical linking would represent a weak form of integration while a close relationship of content would constitute strong integration. One of the benefits of integrated instruction is that it presents ready-made connections between academic and occupational content that students might have difficulty making for themselves (Grubb et al., 1996), and in this sense, strong integration would be preferable to weak forms.

Strong integration should promote generalization of learning between academic and occupational contexts. Many learners seem to show poor transfer of skills from school to workplace (Mikulecky & Drew, 1991). In fact, early cognitive researchers found that transfer from one learning situation to another was rare (Thorndike & Woodworth, 1901). However, more recent studies indicate that transfer will occur if the contexts of learning and practice are highly similar (Detterman, 1993). When academic and occupational instruction are linked, contexts of learning necessarily become closer, promoting generalization of skill across the two contexts. For example, nursing vocabulary learned in a freshman composition class may be expected to generalize to a nursing class, and experience in using computers or applying accounting concepts in business classes should enhance ability to write about these topics.

TEACHER STYLE

Previous researchers have claimed that one of the advantages of academic-occupational integration is an increase in student-centered instruction (Grubb et al., 1996; Illinois Task Force on Integration, 1997). It is necessary to clarify the meaning of student-centered instruction, because the term has been used in at least two different ways in the literature. On one hand, Cuban (1995) focuses on the managerial and communicative aspects of instruction, such as the amount of teacher talk, the level of student involvement in planning the use of class time and working in groups, and the arrangement of classroom furniture. On the other, Grubb et al. (1996) focus on the content of instruction, characterizing education as student-centered when what is taught is perceived by students as being interesting and useful (p. 15). In principle, it is possible to teach material of high interest and utility by means of formal lectures and boring material in a cooperative learning environment. As one of its objectives is to describe classroom process, the current study applies Cuban's characterization rather than Grubb's to distinguish teacher- from student-centered classrooms.

While levels of student involvement seem generally low in college classrooms (Nunn, 1996), student-centered instruction appears to benefit cognitive processes and motivation. Active involvement in learning enhances the ability to remember and apply information when needed (Auster & MacRone, 1994; Bransford, 1979), and when learning in groups, students build more knowledge than when learning alone (Resnick, 1989). Helping the teacher design instruction rather than being a passive recipient of instruction may increase motivation to learn (Cordova & Lepper, 1996). Student-centered learning may be particularly appropriate for diverse student populations (Perry, Menec, & Struthers, 1996) who have experienced little academic success.

However, while student-centered learning appears to be beneficial, more formal, teacher-centered instruction provides necessary structure and may be necessary to ensure curriculum coverage. Further, some content areas may lend themselves better to lecture formats and some to experiential modes (Achtenhagen & Grubb, 1998). In fact, Cuban (1995) advocates the combination of student- and teacher-centered learning (i.e., a "hybrid" in which the teacher dominates, but students have an important role to play in planning and participating in instruction [p. 11]).

EXPLICITNESS OF LITERACY INSTRUCTION

Another question concerns the way in which academic skills are addressed in integrated instruction. It is widely recognized that community college students need to improve their reading, writing, math, and critical thinking skills in order to prepare for increasingly sophisticated tasks in today's workplace (Bailey, 1995; Mikulecky, 1998; Murnane & Levy, 1996). However, there has been little systematic study of how these skills are taught (Grubb, 1998). It has been suggested that vocational students need explicit instruction in literacy skills in a way that emphasizes their importance in the workplace (Achtenhagen & Grubb, 1998; Stasz, 1997). Earlier, Bloom (1956) emphasized the need for explicit learning in general, arguing that the higher cognitive processes of analysis, synthesis, and evaluation could not be left to implicit learning. The value of explicit instruction has been demonstrated in areas as diverse as the teaching of reading (Harris, Graham, & Deshler, 1998) and high school physics (Huffman, 1996) and has been advocated for students who have special learning needs (King-Sears, 1997).

Explicit instruction includes explaining and demonstrating new content and skills, requiring frequent guided practice using the new material, carefully checking students' understanding, and allowing time for independent practice. Stasz (1997) emphasizes the value of combining explicit instruction and authentic materials for occupational students. Achtenhagen & Grubb (1998) lament the lack of explicit instruction in vocational education, but the problem extends more broadly; elementary and secondary school teachers have also been criticized on the same grounds (Peverly & Kitzen, 1998; Rosenshine & Stevens, 1986). Ideally, when academic and occupational instruction are integrated, direct instruction should be provided in both areas. Simply assigning math or assessing learning by means of report writing does not constitute literacy instruction; rather, students need explanations, demonstrations, and guided practice in these skills.

CLARITY OF INTEGRATION

It is important that students understand the nature of academic-occupational instruction. Grubb (1996) points out that when programs "integrated" education merely by requiring that vocational students take general education courses, the connections were lost on the students. The contention that occupational education students should not be left to integrate the two areas themselves is supported by studies that suggest that low-achieving students lack the metacognitive skills to monitor their own learning processes (Brown, Pressley,

Van Meter, & Schuder, 1996) or to coordinate information from various sources (Meltzer, 1993). Even in models that are designed to integrate academic and occupational subject matter, such as linked courses or applied academics, students might not be fully aware of the instructional intent unless they are explicitly informed. Generalization of learning may be enhanced when curriculum materials, such as course syllabi, clearly specify that instruction is being integrated.

PROFESSIONAL DEVELOPMENT

While a case can be made for academic and occupational integration based on learning principles, community college faculty may be resistant to this educational reform. As in postsecondary education in general, community college faculty affiliate with a discipline (Bayer & Braxton, 1998). Since disciplines vary in the ways they structure knowledge and in how faculty plan courses and interact with each other (Dressel & Marcus, 1982), lack of familiarity may cause faculty to avoid disciplines other than their own. Strong adherence to a particular discipline may create resistance to reform (Lattuca & Stark, 1994). In particular, academic and occupational faculty rarely cross paths (D. Brewer & Gray, 1997) and may have little interest in incorporating the other's subject matter.

Academic faculty may be unfamiliar with occupational content or may feel that teaching applied skills represents a lowering of standards. Not surprisingly academic instructors are less likely than vocational teachers to be directly connected to industry and to use job-related pedagogy (D. Brewer & Gray, 1997). At the same time, occupational instructors may feel unprepared to address academic areas such as literacy skills. Both academic and vocational educators may fear that they will not be able to cover a sufficient amount of the curriculum if they incorporate additional areas. Since, as indicated above, integrated instruction appears to offer substantial benefits to students, it is worth considering how faculty resistance can be met through professional development processes.

The current study investigated administrator, faculty, and student perceptions of the benefits, drawbacks, and obstacles to integrated instruction in order to identify areas where professional development would facilitate the implementation of integrated instruction. Further, the professional development approaches being used to implement academic-occupational education on various campuses were described.

METHOD

This is a descriptive, instrumental case study (Stake, 1995; Yin, 1994) of academic-occupational integration in selected community colleges. The case study method permits an investigation of a phenomenon in its real-life context (Yin, 1994, p. 12-13), especially appropriate in the present case, since there are very few descriptions of classroom processes in integrating instruction in community colleges.

Study Questions

1. Curriculum: How is curriculum being integrated in community college career-preparation programs?
2. Instruction: What is the nature of integrated instruction in the classroom? How close is the integration of academic and occupational material in the classroom? To what extent is student-centered instruction used? How explicit is instruction in literacy skills? How clearly do curriculum materials state the intent to integrate instruction?
3. Perceptions: What are the views of and reactions to occupational-academic integration on the part of faculty and administrators and students? What is the colleges' rationale for integrated instruction? What variables may account for its learning outcomes?
4. Professional development: What approaches to faculty development activities aid the implementation of academic-occupational education?

Sites and Students

Seven community colleges participated in the study. The colleges were in urban, suburban, and rural areas in four states, two in the Northeast and two in the Midwest. The research focused on programs in allied health, nursing, business, and technology. The sites were selected based on the following criteria: (1) the institution was offering one or more integrated occupational courses during the data collection period; (2) the college considered the course(s) to be good examples of integration; (3) the course(s) exemplified one of the curriculum integration models identified by Badway and Grubb (1997) or the Illinois Task Force on Integration (1997), and (4) the college was interested in participating in the case study. We sought instances of integration specifically in programs that had direct career applications and that culminated in the associate of applied science (AAS) degree, although we did include a one-year allied health certificate program. The college's purpose for integrating occupational and academic

instruction was not a selection factor, although the need to address students' need for academic and critical thinking skills was evident in all cases selected.

Generalization of findings is precluded by the small number of cases as well as the fact that neither the colleges nor the states in which they are located constitute a representative sample. Further, there is an unavoidable conflation of sites and models because, in general, the colleges were only using one or two integration models. However, sites were selected for balance, variety, and opportunity to learn, on the understanding that a "good instrumental case study does not depend on being able to defend typicality of the case" (Stake, 1995, p. 5). Confidentiality was maintained to ensure that institutions would not be embarrassed by reports of the extent of basic skills needs or difficulties in new implementations. Students signed human subjects consent forms prior to interviews and survey administration.

In general, the students conformed to descriptions of community college students such as those in A. M. Cohen and Brawer (1996). Although ethnic background varied as a function of whether the college was urban, suburban, or rural, the typical student had a full- or part-time job, was a parent, and had inadequate academic skills in the English language, reading, writing, math, or critical thinking. Income was often very low. Faculty and administrator interview responses indicated that large proportions of the students did not have clear career goals or needed further preparation to function in the workplace, both in terms of skills and an understanding of what was needed for career advancement. Not all students planned to earn a degree; some were only intending to take two or three courses. Some students were attending the community college because tuition was lower than at nearby four-year colleges.

Cases

The study investigated five integration models previously identified by Badway and Grubb (1997) and the Illinois Task Force on Integration (1997). Each classroom in the study exemplified one of the models.

Model 1. Linked courses. A cohort of students takes a pair of courses in which curricula are aligned. Linked courses are also known as paired or tandem courses.

Model 2. Course cluster. A cohort of students takes a set of three or more courses in which curricula are aligned. Course clusters are also known as learning communities.

Model 3. Infused occupational courses. Single occupational courses incorporate instruction in academic skills, as, for example, in writing-across-the-curriculum classes. The primary objective of these courses is to teach occupational content.

Model 4. Infused academic courses, or applied academics. Single academic courses teach reading, writing, math, or critical thinking using occupational themes. The primary objective of these courses is to teach academic skills.

Model 5. Hybrid courses. Single courses have a dual emphasis on occupational and academic content.

Table 1 lists the colleges and models, examples, and courses. There are more courses than examples, because linked and clustered courses are treated as single examples.

Data Collection

Between two and four days were spent at each of six sites and contact with the seventh was made by telephone and mail. A total of 33 classes participated, of which 25 were observed. In addition, students in 23 classrooms completed an anonymous survey, and we interviewed 137 individuals, including 77 students, 40 instructors and chairs, 13 administrators, and 7 other personnel.

When asked to provide any materials that would help us understand their approach to integrated instruction, interviewees furnished course catalogs, syllabi, textbooks, videotapes, recruitment materials, conference handouts, published articles, professional development materials, faculty handbooks, student assignments and related handouts, samples of students' work, minutes of industry advisory boards and college committees relevant to integrated instruction, and institutional reports.

Table 1: Sources of Information

Example	Course Title	College	Observation	Student Surveys*	Interviews: Student*	Interviews: Faculty/ Admin	Curric Mtls
1.1	Materials of Industry	SCC	x	x	x	x	x
1.1	Composition I	SCC	x			x	x
1.2	Keyboarding II: Formatting	SCC	x	x	x	x	x
1.2	Introduction to Speech	SCC	x			x	x
1.3	Training the Trainer	SCC	x	x	x	x	x
1.3	Introduction to Social Science	SCC	x			x	x
1.4	Introduction to Computers	ACC	x	x	x	x	x
1.4	English as a Second Language	ACC	x			x	x
2.1	Introduction to Health Care: Nursing	ECC	x	x	x	x	x
2.1	Health Care Ethics	ECC	—			x	x
2.1	College Composition I	ECC	x			x	x
3.1	Physical Therapy Assistant I	GCC	x	x	—	x	x
3.2	Comprehensive Nursing Care II	GCC	x	x	—	x	x
3.3	Principles of Accounting II	GCC	x	x	—	x	x
3.4	Retail Merchandising	GCC	x	x	—	x	x
3.5	Introduction to Automotive Services	ECC	x	x	—	x	x
3.6	Brake System Service	ECC	—	x	—	x	x
3.7	Chassis Service	ECC	—	x	—	x	x
3.8	Principles of Patient Care	LCC	x	x	x	x	x
3.9	Microeconomics	OCC	x	x	—	x	x
3.10	Business Law	OCC	—	x	—	x	x
3.11	Electronic Devices	OCC	—	—	—	x	x
3.12	Image Production and Evaluation II	OCC	x	—	—	—	x
3.13	Special Radiologic Procedures	OCC	x	x	x	x	x
3.14	Meeting Human Needs II	OCC	x	x	x	x	x
3.15	Senior Physical Therapy Seminar	OCC	x	x	—	—	x
3.16	Admin. Procedures & Technologies	OCC	—	x	—	x	x
4.1	ESL for Allied Health	LCC	x	x	x	x	x
4.2	Topics in Health Care	LCC	—	—	—	x	x
4.3	Communications II	RCC	—	—	—	x	x
5.1	Creative Problem Solving in Business	GCC	x	x	—	x	x
5.2	Health Employment Issues	LCC	x	x	—	x	x
5.3	Clinical Skills Lab	LCC	x	x	x	x	x

*Blank spaces indicate linked and clustered courses

Instrumentation

Classroom observations were based on an instrument designed for the study that included physical setting, ambiance, instructional approach, factors specific to integrated instruction, students' responses to instruction, student-teacher interactions, types of learning, and attentional, motivational, and emotional factors. Items were based on Bloom (1956), Cuban (1995), Good and Brophy (1987), and Weinstein & Hume (1998) and incorporated SCANS (1991) foundation skills. In addition to the student survey form, interview guides were developed for students, faculty, and administrators, respectively. All instruments are available from the author.

Data Analysis

An analytical framework was developed to describe four aspects of curriculum and pedagogy: strength of integration, teacher style, explicitness of literacy instruction, and clarity of integration. Since the first three categories refer to pedagogy, they were applied only to the 25 classrooms observed. The fourth category was applied to curriculum as reflected in the syllabi for all 33 classes.

Strength of integration refers to whether the instructor overtly linked occupational and academic skills in the classroom. A classroom was classified as strong if the instructor connected occupational and academic content during an observation, or connections were demonstrated in at least one student assignment furnished by the instructor. Classrooms where no such connections were detected were labeled weak.

Teacher style refers to whether instruction in the class session observed was learner- or teacher-centered, or a mixture of the two, with reference to Cuban's (1995) characterization. In teacher-centered classrooms, the teacher controls the content, timing, and conditions of instruction; teachers talk more than students; instruction is directed to the whole class, with little use of small groups or individualized instruction; the teacher decides how class time will be used; the teacher relies heavily on a textbook for both course content and teaching method; and the classroom furniture usually consists of rows of desks or chairs facing a blackboard, with the teacher's desk nearby. In contrast, when instruction is student-centered, the students and teacher share responsibility for what is taught and how they will learn it. Students talk at least as often as the teacher; instruction tends to be individualized or directed to groups; the students help choose and organize instructional content; innovative instructional materials are used for at least half the time; classroom furniture is arranged to permit individual,

group, and whole-class activities; and at times students move about the classroom rather than sitting still for long periods of time. Student-centered learning activities include role-play, practical projects, the use of cases, and collaborative learning.

If a standard lecture-and-questions format was used exclusively during the session observed, the classroom was labeled teacher-centered. If the teacher utilized any one of the features of student-centered instruction described by Cuban, the classroom was labeled student-centered, and if at least one feature was used in combination with lecturing, the classroom was labeled mixed.

Explicitness of literacy instruction refers to the manner in which literacy skills were taught in the 25 classrooms observed. As is customary in adult literacy instruction, we took a broad view of literacy, which we defined as reading, writing, oral language, math, and thinking skills. Classrooms in which the instructor taught any of these skills were labeled explicit. Teaching was defined as discussing a skill or showing students how to perform it, rather than merely having students use the skill. Explicit instruction could be provided through the teacher's explanation or through textbook exercises done under the teacher's guidance. If the skills were not taught, the classroom was categorized as implicit. For example, if the students were asked to write a report but the teacher did not discuss procedures for doing this, the classroom was labeled implicit. The classrooms were categorized based only on observations; instances of explicit instruction reported by faculty in interviews were not included.

Clarity of integration refers to whether or not the syllabi for the 33 classes stated explicitly that instruction was integrated.

Background: Colleges and Models of Integration

To provide context for findings on curriculum, instruction and perceptions, the colleges, integration models and salient issues are briefly described below (fuller information is available in Perin, 1998). All information is based on interviews and documents provided by the colleges.

Alpha Community College: Linked Courses

ACC (fictitiously named, as are all colleges in this study) was part of large urban university system in the Northeast. Enrollment in degree programs was 9,500. Approximately 70% of the students were non-English-speaking immigrants, and about a third of entrants tested into English as a second language (ESL) remediation. Many were not proficient in English even after completing these classes; in the words of an administrator, "students are ESL forever." Two issues

had impact on ESL instruction. First, many students were dropping out before completing ESL requirements, frustrated at being stuck in remediation and unable to enter college-credit courses. Second, while most of the college's ESL instruction was being offered under the aegis of the English department, there were plans to move this function to the continuing education department or to centralized satellite remedial institutes that the university was developing off site.

In an attempt to stem the tide of dropouts as well as keep ESL instruction within the regular academic program, the college had begun to link all ESL courses to college-credit courses in discipline areas. Class size was kept small, supplementary tutoring was provided, and regular staff development meetings were held to align curriculum. Two different models of linking courses had been implemented, one in which a cohort of full-time students attended a sequence of courses, and the other a curtailed version in which part-time students attended paired courses. The effort was led by two English faculty who had written several reports containing empirical data on improvement in grades, rates of completion, and the skipping of ESL levels as well as teacher testimony. The effort became highly visible in the college. For example, a full-day professional development workshop to plan course-linking was kicked off by two senior administrators of the college.

At the time of the study, course-linking had been in effect for five years, but the content courses had been confined to liberal arts, social sciences, and student development. The lack of involvement of career-related courses was notable as approximately one-quarter of the student body was enrolled in the business program. At the time of the study, the first occupational course, an introductory course in the use of computers required for business majors, was being linked to an intermediate ESL class.

Lambda Community College: Infused Occupational, Infused Academic, and Hybrid Courses

LCC was similar to ACC in being part of a large urban university system in the Northeast (although in a different university and state) in which the student body was ethnically and linguistically diverse. The current study investigated an allied health certificate program that the college had been offering for eleven years. The program provided cross-training and multiskilling for various entry-level positions. Most of the students in the program were low-income, urban females who were welfare clients and/or immigrants. The allied health program was similar to programs described below at SCC, ECC, and RCC in consciously responding to the needs of employers, and preparation for employment was the main objective.

As of 1995, 560 students had completed training, and the program boasted a retention rate of at least 90%, with 80% of the graduates finding jobs or continuing their education. A large proportion required remedial English (70%) and math (95%) instruction even though they had either high school diplomas or GEDs. Academic skills were poor, and for many, even earning a GED had been a struggle.

The program trained students for five certificates, Patient Care Assistant, Medical Assistant, Medical Lab Assistant, Phlebotomy Technician, and Health Care Preparation. Students received up to 29 college credits that could be transferred to an associate's degree program. A series of core courses integrated academic and occupational instruction using three different models: infused occupational, infused academic, and hybrid. The program required a 120-hour internship-practicum designed to reinforce classroom learning as well as weekly group counseling sessions that emphasized work habits and attitudes.

Gamma Community College: Infused Occupational and Hybrid Courses

GCC was a suburban college that was part of a statewide university system in the Northeast (different system, same state as ACC). Enrollment in degree programs was approximately 23,000. There was a strong commitment to collegiate functions (Eaton, 1994), and many of the faculty held doctorates. Although most students expected to transfer to four-year institutions, at least 50% placed into at least one remedial course. When surveyed in 1986, instructors stated that they were "dumbing down" their instruction. The college considered, but for practical reasons was unable to implement, a campus-wide requirement that completion of remedial courses be prerequisite for entry to college-credit courses.

Even when individual programs required that any remediation be completed prior to entry, academic skills problems remained that affected preparation for careers. For example, a nursing instructor interviewed in the current study described difficulties with critical thinking that affected judgments in hospital internships. A retail merchandising instructor stated that while literacy skills were adequate, the students needed special help in learning to think logically and in applying mathematics knowledge to retail merchandising problems.

At the time of the current study, a campus-wide "active learning" program had been in effect for over ten years. Its purpose was to infuse discipline courses with reading, writing, listening, speaking, critical thinking, and teamwork skills.

Following constructivist educational principles expounded by Freire (1972),[2] the approach emphasized collaborative and project-based learning and journal-writing, with a great reduction in lecturing. Active learning was applied widely in both general and career-related courses, including infused occupational and hybrid courses in the areas of business, nursing, and allied health.

Epsilon Community College: Learning Community and Infused Occupational Courses

ECC served urban and suburban students in a midwestern state. Enrollment in degree programs was approximately 18,000. Although the college did not have a mandatory testing program for remedial placement, approximately half of the students were considered to have inadequate literacy skills, especially in the writing area.

The college had been integrating courses within general education for seven years, building on experience with a pre-entry summer program for at-risk high school graduates. English was the common denominator of many of the learning communities, which consisted of course clusters such as biology-geography-English and sociology-psychology-English. Learning communities had not included occupational courses until a short time before the current study when the college joined a statewide network designed to mentor faculty who were interested in integrating academic and occupational instruction. As a result of this involvement, ECC offered a learning community that included a career-related course. The development of this cluster, consisting of nursing, philosophy, and English composition, was initiated by a senior administrator.

In an effort separate from the learning community initiative, ECC offered infused occupational courses in automotive technology. These courses were part of two programs sponsored by large automobile manufacturers in which students alternated between 12 weeks in the college and 12 weeks in a car dealership over a two-year period. English skills were infused into automotive instruction in three different ways. First, an English instructor made weekly visits to an automotive lab to teach English skills, using materials such as technology manuals that students used in their occupational training. Second, students used distance learning materials consisting of videotapes and a viewing guide produced by automotive, English, and speech faculty. Third, one of the programs used a curriculum published by a nationally recognized professional automotive technicians' organization, comprising eight technical courses that were infused

[2]We are grateful to W. Norton Grubb for pointing out in a review of this paper that Freire's educational principles represent a constructivist line of thinking that predates Freire by many years.

with academic competencies including reading comprehension, writing ,and study skills.

Omega Community College: Infused Occupational Courses

OCC was part of a large state university system in the Northeast (same state as GCC and ACC, same system as GCC) and served an urban and suburban population. The college enrolled 5,270 degree students, the majority in liberal arts. OCC integrated instruction via writing-across-the-curriculum, referred to as "writing emphasis" (W) courses. These courses had been offered for over ten years, and at the time of the current study, it was required that all students take at least two W-courses to graduate. These courses were entirely in discipline areas; composition and freshman English did not serve as W-courses. Each curriculum contained one W-course, and at the time of the study, the college offered approximately 50 such courses.

In W-courses, students were expected to produce approximately 2,000 words of formal writing that met minimum standards, defined in a college handbook as containing a thesis or main idea, development of the main idea, logical organization of information, complete sentences, standard grammar, punctuation, and spelling, and language appropriate to the field. Faculty were expected to respond by correcting papers. Because of the extra work required of teachers, maximum class size for W-courses was 25.

The purpose of the writing-intensive courses was to meet general education requirements. A salient issue was that while writing was to be used as a form of assessment, W-course teachers were not expected to teach writing. Rather, responsibility for formal writing instruction was given to instructors of a prerequisite freshmen composition course. It was assumed that students who were able to receive credit for that course were capable writers and would not need additional instruction. Should students in fact display the need for improved writing skills in W-courses, instructors were advised either to improve the quality of the writing assignments or refer students to the college's academic skills center. Thus, the writing-emphasis effort was not seen as a remedial intervention, and in fact at least one interviewee was indignant at the suggestion that it might serve this function. Not surprisingly, no instances of writing instruction were seen during observations of five W-courses at this college.

Sigma Community College: Linked Courses

SCC served suburban and rural students on the fringe of a large city in the midwest (different state from ECC, same state as RCC, below). Enrollment in

degree programs was 8,084, 60% in general education and 40% in occupational education. The region had experienced a large growth in both industry and population, and at the time of the study, the unemployment rate was only 2%. Community colleges in the area were experiencing problems recruiting students, even, though the job placement rate on completion was 100%. SCC had developed a credentialing system to promote student persistence whereby AAS students were awarded a Certificate of Supervision halfway through the program and the AAS on completion.

The college had an Academic-Occupational Integration Center (name changed), founded several years prior to the current study in a partnership with local business. Approximately 230 students were enrolled in six programs under the auspices of the center. Almost all were incumbent workers who were attending the college part-time. Most were reimbursed by their employers for tuition and books. Besides classes held in the college during evening hours, some classes met at worksites, some on Saturdays. Courses were designed to meet industry needs and were informed by a prior assessment of industry skills that showed that the information content of every job in 15 local manufacturing firms had increased considerably. Through the center, business representatives helped faculty define the direction and emphasis of curriculum.

At the time of the study, the center was using a linked-course model (as were ACC and ECC) in several programs, including manufacturing management, office systems technology, and plastics manufacturing technology. The major purpose of integrated instruction was to increase general education in occupational education programs. Occupational courses were linked with academic courses such as speech, freshman composition, and sociology. At the time of the study, students were taking two courses per semester and graduating in a four-year period. The students in each occupational area formed cohorts, as with ACC and ECC.

All credits, both general education and occupational, were accepted for transfer by a four-year institution in an adjoining state that maintained an office on SCC premises, while only the general education credits were accepted by the state university system. There was some disagreement among faculty regarding a math requirement; math faculty resisted changes in content suggested by occupational instructors, arguing that, if amended, the course would no longer be transfer-level.

Rho Community College: Infused Academic Courses

RCC was located in a suburb of a large midwestern city (same city, different suburb from SCC). The college enrolled 18,000 students in 150 degree and certificate programs. The current study focused on the Automotive Manufacturer Specific Training Program, which, in a cooperative arrangement with two major automotive manufacturers, prepared students to be product service technicians (previously known as auto mechanics). As at ECC, this was an AAS program that alternated college training and practical experience at a dealership. There were incentives for completion: not only did graduates receive a pay raise but one of the manufacturers required an AAS degree for further training. Fifteen students per year were enrolled in the program, so that class size was substantially smaller than usual. Students were responsible for the cost of tuition, textbooks, and a hand tool set required for work at the dealership, although some students had half-scholarships. The companies donated cars and equipment for the training.

The program required four general education courses: technical mathematics, humanities (a course in modern business ethics), and two applied academics courses called Communications I and II, which students took in Fall and Spring of the second year. Neither of the communications courses was accepted for transfer, but students could substitute transfer-level rhetoric courses if they wished. The chair of the English department designed and taught both communication courses, which integrated freshman composition and SCANS (1991) skills. The impetus to utilize automotive themes in teaching literacy skills came from the students' lack of interest in general education. Contextualizing the skills in work tasks was a way of engaging this population.

FINDINGS

Curriculum Integration

The study found implementations of five models of academic-occupational integration in business, allied health, nursing, and technology programs. Course-linking and clustering, occupational and academic infusion, and hybrid instruction all provided ways of integrating curriculum across occupational and academic areas. Integrated courses were offered at introductory, intermediate, and advanced levels. For example, in the nursing area, integrated instruction was offered both at introductory (ECC) and advanced levels (GCC). Writing-intensive courses (OCC) seemed to be found more at advanced levels. The learning community and course-linking models permitted connections between courses at different levels, such as introductory nursing with a higher-level philosophy course

(ECC) and intermediate ESL with introductory business (ACC). Mixing levels had advantages and disadvantages. For example, in the ECC cluster, designed for prenursing students, the nursing instructor could reduce the amount of time spent introducing the subject of bioethics, since the topic was addressed in the philosophy class. However, the philosophy instructor found the students to be academically underprepared for the discussions and work normally assigned in this class.

An unanticipated but important finding of this study was the difficulty in finding cases: at least in the four states targeted, only a small number of community colleges seem to be integrating academic and occupational curriculum (i.e., actually offering courses). Given the criterion that a site had to have at least one class in operation during the data collection period, considerable effort was needed to identify the seven colleges that participated in the current study. (It should be mentioned that several other colleges in one of the states were offering courses but did not indicate an interest in taking part in the study.)

The size of the national pool of integrated courses could not be determined from the most comprehensive work in this area to date (Badway & Grubb, 1997), since its purpose was to describe models rather than take a "census" (Grubb et al., 1996, p. 30). However, an estimate of the incidence of academic-occupational integration is possible by expressing the number of courses identified in this study as a proportion of the total number of courses offered at the seven participating colleges. The 33 courses represent x% of the total of x courses listed in the college catalogs covering the data collection period. Even if the estimate is raised by 25% to take account of courses of which we might not have been informed, the incidence is still low, given the benefits claimed for this type of curricular reform.

Difficulty in finding cases does not appear to be explicable in terms of not asking a sufficient number of people or poor communication of the aims of the research. In preliminary inquiries made of national community college leaders, state education administrators, university deans for academic affairs, college academic vice presidents, deans of instruction, department chairs, and faculty in numerous institutions, questions included: "Is occupational instruction being integrated with academic instruction in any way, such as linked courses, learning communities, applied academics, or classes like writing-across-the-curriculum?" "Are there any occupational courses that bring in academic skills?" "Are there any courses where vocational skills are combined with composition, math, or any other kinds of academic skills?" "Are there any learning communities on your

campus that involve an occupational course?" "Are there any courses in business, allied health, nursing, or technology that are combined in any way with academic courses?" It was explained that occupational education was being defined as career-related programs culminating in an AAS degree or certificate.

Preliminary contacts indicated that while there were relatively few classes in operation, sometimes there was an abundance of plans. This corroborated Badway and Grubb's (1997) experience when following up a mail survey that it "appeared that the answers to these questionnaires were often exaggerated: in some cases it looked like community colleges reported practices under development, or practices they wanted to develop, rather than examples of curriculum integration already in place" (p. 71). Barriers to offering integrated courses seemed to be raised by college administrators, program chairs, and teachers alike, and in one state, a union representing community college faculty raised opposition because integration's interdisciplinary approach was antithetical to the union's protection of instructors by discipline and because integration meant increased workload.

Another problem was that integration was often identified with applied academics courses, which were not considered transfer-level. A consultant to the integration network in one of the midwestern states (see section on colleges and integration models, above) indicated that most technical or applied courses were "death" for transfer. Sometimes applied academics courses were masked as traditionally titled general education courses that were "especially appropriate for" certain career areas (Badway & Grubb, 1997, p. iv). Scheduling difficulties posed a further barrier. An English instructor described scheduling as an important expression of college support for integration: "The registrar has to understand how to cluster courses." The availability of released time for teachers was also seen as necessary if courses were to be integrated.

In our preliminary investigation, we quickly learned to distinguish between "integrated instruction" and "academic-occupational integration." Learning communities were sprouting up in colleges across the country, but these tended to be confined to general education courses, with serious underrepresentation of occupational education. This trend was evident in a national listing of learning communities (Washington Center News, 1996). The historic divide between occupational and academic education (Achtenhagen & Grubb, 1998) seemed to be alive and well.

Instruction

The categorization of classrooms by strength of integration, teacher style, explicitness of literacy instruction, and clarity of integration is shown in Table 2.

Strength of Integration

Seventeen (68%) of the 25 classrooms observed were strongly integrated. Many vibrant cases of integration were observed, although it is notable that less than three-quarters of the classes offered by the sites as examples of integrated instruction were actually integrated, as least in terms of discernible classroom practice, expressed here as strength of integration.

There was variation in strength of integration within cases: for example, only 5 of the 13 classes observed that exemplified model 3 (infused occupational courses) were strongly integrated. This finding was somewhat skewed by the fact that 4 of the classrooms were within one college, OCC, where college guidelines stipulated that writing was to be assigned but not taught. However, there was some variation even at this campus; in Example 3.14, a nursing classroom, the instructor gave students extensive written guidelines on journal writing for nurses and individual help with writing. There was also variation within example 1.2 (linked-course model) at SCC, where the keyboarding instructor referred to speech content but the speech teacher did not utilize occupational material.

Descriptions of strongly and weakly integrated classes may be found in the Appendix. In two examples of weak integration described, it is possible that the instructors were not attuned to the possibilities of drawing in companion content. When interviewed, they were enthusiastic about their students and appeared to feel that they were doing something new. The fact that their instruction was not in fact integrated is reminiscent of the case of "Mrs. Oublier" (D. K. Cohen, 1990), who thought she had revolutionized her teaching when she was in fact continuing to engage in standard practice.

Teacher Style

Seven (28%) of the 25 classrooms used student-centered instruction, 5 (20%) used teacher-centered instruction, and 13 (52%) were mixed. Although previous research suggested that integrated instruction tends to be student-centered, we

Table 2: Curriculum and Pedagogy

Example	Course Title	College	Integration	Style	Literacy	Clarity
1.1	Materials of Industry	SCC	S	T	I	M
1.1	Composition I	SCC	S	M	E	NM
1.2	Keyboarding II: Formatting	SCC	S	M	E	M
1.2	Introduction to Speech	SCC	W	St	E	M
1.3	Training the Trainer	SCC	S	St	I	NM
1.3	Introduction to Social Science	SCC	S	M	E	M
1.4	Introduction to Computers	ACC	W	T	I	NM
1.4	English as a Second Language	ACC	W	St	E	M
2.1	Introduction to Health Care: Nursing	ECC	S	M	I	M
2.1	Health Care Ethics*	ECC	—	—	—	M
2.1	College Composition I	ECC	S	St	E	M
3.1	Physical Therapy Assistant I	GCC	W	M	I	NM
3.2	Comprehensive Nursing Care II	GCC	S	M	E	NM
3.3	Principles of Accounting II	GCC	S	St	E	M
3.4	Retail Merchandising	GCC	S	M	E	NM
3.5	Introduction to Automotive Services	ECC	S	M	I	M
3.6	Brake System Service*	ECC	—	—	—	—
3.7	Chassis Service*	ECC	—	—	—	—
3.8	Principles of Patient Care	LCC	S	M	I	M
3.9	Microeconomics	OCC	W	M	I	M
3.10	Business Law	OCC	—	—	—	M
3.11	Electronic Devices*	OCC	—	—	—	—
3.12	Image Production and Evaluation II	OCC	W	T	I	M
3.13	Special Radiologic Procedures	OCC	W	T	I	NM
3.14	Meeting Human Needs II	OCC	S	M	I	M
3.15	Senior Physical Therapy Seminar	OCC	W	S	I	—
3.16	Admin. Procedures & Technologies*	OCC	—	—	—	—
4.1	ESL for Allied Health	LCC	S	T	E	M
4.2	Topics in Health Care*	LCC	—	—	—	M
4.3	Communications II*	RCC	—	—	—	M
5.1	Creative Problem Solving in Business	GCC	S	S	E	M
5.2	Health Employment Issues	LCC	S	M	I	NM
5.3	Clinical Skills Lab	LCC	S	M	E	M

*Not observed

Key: Integration: S = strong, W = weak
Style: T = teacher, St = student, M = mixed
Literacy: E = explicit, I = implicit
Clarity: M = syllabus mentions integrated instruction
NM = syllabus does not mention integrated instruction

saw strongly integrated instruction in both traditional lecture and student-centered formats. Examples of teaching style can be found in the Appendix. Table 2 shows that the student-centered classrooms tended to be weakly integrated. Exceptions included Examples 2.1 and 3.3. In contrast, in Example 1.1, strong integration was found in a traditional lecture format. Interestingly, the students found this teacher to be "bland" and "boring," preferring the composition teacher, who used a mixed style. (Occupational students' preference for an academic teacher is a decided switch from the usual pattern.)

The student-centered aspect of the mixed-style nursing class in Example 3.2 is quite different from the student-centeredness found in the ESL class in Example 1.4. In the nursing classroom, the instructor carefully structured every moment of class time so that even when students conferred in a group activity, they were meant to be accomplishing specific occupationally related objectives. In Example 1.4, although the students worked in groups with tutors, the activity was somewhat disorganized. Further, while the ESL class allowed for practice in conversational English, the content was not occupationally related, despite the link to the business class. Therefore, although student-centered, Example 1.4 did not maximize the opportunity to reinforce occupational content.

Explicitness of Literacy Instruction

Ten (40%) of the 25 classrooms provided explicit instruction in literacy, while 15 (60%) were implicit. As might be expected, the classes labeled explicit tended to be academic (e.g., ESL and English composition), although 5 were occupational or hybrid. Seven of the 25 classrooms (28%) demonstrated strong integration with implicit literacy instruction. In these instances, pedagogy seemed to be lagging behind curriculum.

We encountered a lack of direct instruction in basic academic skills even in strongly integrated classrooms, supporting Achtenhagen & Grubb's (1998) call for more explicit instruction in occupational education. Descriptions of explicit and implicit instruction may be found in the Appendix. In Example 3.4, a retail merchandising teacher taught applied math skills in an individualized manner, using computers and a textbook. Active learning methods (Examples 3.2, 3.3, 3.4) were designed to provide explicit teaching of literacy skills, although one of the active learning classrooms we observed (Example 3.1), a physical therapy assistant class, provided implicit rather than explicit literacy instruction.

Clarity of Integration

Seventy-one percent of the syllabi for the 33 classes clearly mentioned integrated instruction. This was done either by cross-referencing topics and skills or referring to learning strategies (see the Appendix for examples).

Perceptions

Colleges' Rationale for Integration

Fifty-seven statements about reasons for integrating occupational and academic instruction were made by 53 interviewees (41 faculty and 12 administrators) in the seven colleges. The responses were assigned to five categories, which were, in descending order of frequency, student performance (60%), efficiency and college policy (18%), student retention (16%), faculty motivation (4%), and external funding (4%). The reasons given by interviewees are listed below. The large majority refer to students' need for improved skills, especially in the literacy area.

Student performance (34 responses, 60%)
- Students need basic (literacy) skills (22)
- Improves occupational learning (2)
- Broadens learning (2)
- Increases access (1)
- Increases students' interest (1)
- Students enter jobs in areas of training (1)
- Students understand problems from multiple viewpoints (1)
- Forces students to study basic skills earlier in program (1)
- Promotes transfer of learning (1)
- Improves grades (1)
- Helps students make connections (1)

Efficiency and college policy (10 responses, 18%)
- Satisfies general education requirements (4)
- Affects budget (cuts costs or increases revenue) (2)
- Accelerates learning (2)
- Reduces instructional time (1)
- Keeps remediation in the college (1)

Retention (9 responses, 16%)
- Reduces dropout (9)

Faculty motivation (2 responses, 4%)
- Faculty motivation, renewal (2)

External (2 responses, 4%)
- College received grant (2)

Benefits of Integrated Instruction

There was much enthusiasm for academic-occupational integration among the faculty, administrators, and students interviewed, as well as in the responses to the student survey. Although there seemed to be substantial costs in terms of administrative attention and faculty workload, many thought that the effort was validated by gains in student motivation and performance and, in turn, retention. Perceptions of positive outcomes are presented below in terms of benefits to students, faculty and the quality of education, the college, and employers.

Benefits to students. Students who typically shun general education will voluntarily swallow a larger dose of academic instruction when it is linked to career education. They become more motivated, which improves retention in programs. Previously hard-to-motivate students, such as in the automotive area, were happier to engage in academic tasks than before. For example, an instructor who taught an applied academics course in English for automotive students at RCC reported that his students were reading more than required.

Skills improve and are applied on the job. Integration in the form of linked courses gave students a sense of community: they interacted more with each other and supported each other's learning. For example, faculty at ACC were gratified to see students working together in the library. In the certificate program at LCC, "every single faculty member is familiar with every single student...there is a very intimate environment." When faculty collaborated to integrate instruction, students received extra attention, which increased motivation.

However, other factors beyond integrated instruction may also enhance motivation. At LCC, students were screened for motivation prior to program acceptance. Also, students in highly competitive health programs appear to be motivated to learn irrespective of the teaching methodology.

Benefits to faculty and the quality of education. Faculty motivation increased. Integration paved the way for intellectual and personal communication in a normally isolating profession. The opportunity to collaborate with other instructors was described as "exciting" by faculty both at ACC and ECC. For example, an ECC English teacher said that she was "excited by widening horizons" when she had the chance to observe a nursing teacher in a clinical setting—"it is refreshing....You form friendships in a learning community." Some stated that the opportunity to interact with other instructors offset the problem of increased workload that accompanied integrated instruction.

Integrated instruction can be motivating to highly educated instructors who are teaching poorly prepared students. However, not all faculty were motivated by

integrated instruction, and collaborations might not always be effective (Example 2.1, Appendix). A chair of English at ACC pointed out that instructors may not be interested in the content of another course but still have to teach it. This issue may particularly affect occupational instructors who are not interested in teaching academic skills. Further, faculty motivation may be traced to noninstructional issues. For example, at ACC, the business chair asked a computer instructor to link his course to an ESL class not only because the instructor had a non-English native language but also because involvement would aid his bid for promotion and tenure.

Another benefit of integrated instruction was an improvement in faculty's teaching skills and awareness of other disciplines. Both occupational and academic faculty expanded their horizons beyond their own disciplines. A social science instructor (Example 1.3, Appendix), who had been fairly traditional prior to involvement with academic-occupational integration, described changes in the way he thought about his subject matter.

Although there was widespread agreement that integrated instruction benefited both academic and vocational education, it was not clear from the interviews or observations which area was being reformed. Some interviewees thought that integration was a reform of occupational education, some thought the impact was on academic instruction, and some did not see it as a reform at all.

Benefits to colleges. Academic-occupational integration may lead to curricular modification. Colleges develop relationships with industry. Colleges become known as state leaders. A senior administrator at SCC thought that integrated instruction was valuable to the college because it had stimulated an updating of curriculum. Another administrator reported that local employers were forming relationships with the college under the aegis of the integrated instruction. Integrating academic skills via writing-across-the-curriculum could draw faculty's attention to the quality of general education.

Benefits to industry. While most faculty and administrators focused on benefits to students, faculty, and the college, some interviewees also saw value for employers. A number of rationale statements mentioned that students needed academic skills to meet increased workplace needs, implying that industry could benefit from having a better-educated workforce. At SCC, in a region where there was a minuscule unemployment rate, employers were eager to hire program graduates.

Obstacles, Pitfalls, Pressure Points

While there was near universal enthusiasm for academic-occupational integration, there were obstacles, pitfalls, and pressure points, which, when considered alongside the benefits described above, can be treated as costs of integrating instruction. Costs can be defined in terms of time, effort, and the expenditures necessary for professional development and instructional planning or for administrative attention to changing classroom procedures and promoting integration. We encountered challenges for education generally and integration specifically. General issues included the effort needed to implement student-centered instruction, such as the teacher learning to give up power in the classroom and the students learning how to work in groups. Another example of a general issue was seen at ECC, where an automotive instructor needed to spend extra time to plan distance learning.

Obstacles, pitfalls and pressure points are classified below into several categories, from general to specific: (1) general issues that arise in initiating a new approach; (2) dependence of a new approach on a campus leader; (3) problems in integrating instruction, whether academic-occupational or within general education alone; (4) problems specific to academic-occupational integration.

Initiating a new approach. Initiating a new approach depended on faculty energy and interest. Some faculty were unwilling to try a new approach to instruction, either because of lack of interest or because it might hurt their chances for tenure or promotion. Sometimes instructors were chosen for a new initiative simply because they volunteered, not necessarily because they were good teachers. In several cases, integrated instruction was begun with the support of external funding. It was expensive for the college to pay for the released time and incentives (e.g., cash prizes) necessary to initiate and maintain integrated instruction. At SCC, faculty new to integration received released time for eight hours of staff development and four hours to work with a partner. Funds that might have been spent on evaluating the effectiveness of integration were spent on professional training. An initiative might depend for its strength on ongoing attention or funding. For example, at OCC, the writing-intensive model seemed to be losing its impetus because faculty workshops and released time for coordinators had been discontinued. Faculty at LCC felt that their model was vulnerable because of the unpredictability of funding.

Importance of a faculty leader. In most cases, the initiation and maintenance of integrated instruction seemed to depend on individual leadership. At ECC, a

popular English faculty member, with the support of a vice president, was able to recruit growing numbers of colleagues and students for integrated instruction (although, as indicated above, the involvement of occupational education was minimal). GCC institutionalized "active learning" over a ten-year period, and its longevity was attributed to the attention given to it by the vice president, whose support and style of leadership was seen as conducive to faculty involvement.

At ACC, a senior administrator mandated the linking of ESL and content courses after a successful three-year pilot led by two English instructors. His endorsement and support were critical, because he had the authority to make funds available for faculty to attend regular full-day staff development meetings. At LCC, the director of the certificate program spent considerable time building faculty relationships and communicating with senior administrators about the program. In contrast, no one in particular was at the helm of OCC's writing-across-the-curriculum effort at the time of the study, and possibly as a consequence, it seemed to be losing power. For example, an interviewee indicated that some of the instructors teaching "W" courses were either not actually incorporating writing, or were only doing so if there was time at the end of the course; there was no penalty, since no one was monitoring the use of writing.

New efforts can be overly dependent on a single leader and if that leader is removed for some reason, and if the program is not sufficiently institutionalized, it can weaken. This may have been a threat at SCC, where the person who initiated the Integration Center and was its central source of energy was about to move to a higher-level position in the college. This person was unusually dynamic and spent much time forming relationships with faculty and business. It was not clear that the center was sufficiently institutionalized in the college's operations to be able to withstand the removal of his attention, especially since its nominal director was assigned only part time and had many other responsibilities.

Integrating instruction. Obstacles to integrating instruction, whether it involved occupational education or not, included faculty workload, curriculum coverage, and, in cases of aligned courses, creating effective faculty collaboration. Increase in faculty workload was by far the most often mentioned drawback of integrated instruction, although many said that the advantages outweighed this disadvantage. Instructors who seemed highly committed to teaching were willing to spend additional time preparing for instruction and, in the case of writing-across-the-curriculum instruction, evaluating students' writing. The move to integrate instruction may not be feasible for marginally committed faculty such as adjuncts or individuals with low motivation.

Another drawback of integrating instruction is that less of the curriculum may be covered, either because additional topics and skills are being taught or because there is an increase in time-consuming group work. Further, interviewees indicated that integrated instruction was perceived by critics as reducing educational quality because it was applied.

Student workload may also increase. Students may have to prepare for collaboration in the classroom by doing a great deal of homework, as in the GCC accounting course (this issue relates more to student-centered learning than integration). At SCC, one of the reasons a fully integrated, modularized model did not take hold was that the students could not complete all the work required.

Collaboration does not come easily to postsecondary faculty, who are more used to working independently. While faculty collaboration was a great success in most cases, there were a few problems that illustrate issues that can arise (Example 2.1, Appendix). For example, difficulties may arise in linked-course models because instructors have different perceptions of the same students, which may emanate from the different disciplinary backgrounds. For example, a nursing instructor at ECC thought that the integrated students showed better attendance and performance, and were more committed than her other students. But she thought that the philosophy instructor, who was teaching a linked course, felt that the students were below the level of the students in her other classes. While it was not possible to ascertain whether differing teaching styles were responsible for the differing perceptions, difference of opinion between faculty could result in mixed messages to students.

Another issue is that different instructors may have different standards for the same work. For example, at ECC, students began by writing papers that they handed in to both nursing and English instructors, with the English instructor grading them for style and mechanics and the nursing teacher for content. Because students were becoming confused by differing evaluations of the quality of their work, the instructors began to assign different work.

Faculty disagreements could cause a breakdown in communication that affects the quality of integrated instruction. This was a threat at ECC, where the college did not provide any support for teacher collaboration. On the other hand, problems in faculty interaction were described by the English chair at ACC (teachers can come to dislike each other), where there were ongoing faculty development meetings devoted to course-linking.

Academic-occupational integration. A major issue was faculty resistance to interdisciplinary education (which is also found in integration within general education). There were also obstacles specific to academic-occupational

instruction: occupational faculty may not wish to teach academic skills and academic faculty may feel that the integrity or standards of their courses were threatened. At OCC, for example, faculty who set up the writing-across-the-curriculum program were sensitive to the strong dislike of content faculty for the idea of being responsible for writing instruction. The guidelines for employing this approach carefully stated that writing was to be used only for evaluative or self-learning purposes and that the content teacher was not responsible for teaching writing skills. Occupational faculty may have been at a loss regarding how to evaluate writing skills.

Another obstacle concerned the transferability of integrated courses to the baccalaureate level. For example, at SCC many students in a program of integrated courses had difficulty completing the prerequisites for a required transfer-level math course, but an associate dean for math appeared to be unwilling to change the requirements or course content; to do so, he felt, would be to lower standards. Several faculty members from the English and math areas at the same campus expressed doubts about being able to integrate academic courses to transfer level. Another issue faced by those who wished to integrate occupational and academic education was the need to keep up with industry changes.

Professional Development

Professional development was a key factor in implementing academic-occupational integration, and several different approaches were used by the seven colleges. ACC, GCC, OCC, and SCC had intensive staff development that occurred over a long period of time. LCC did not have formal staff development, but the director of the certificate program was a strong leader and the small number of staff members had a close relationship, which ensured ongoing communication about instruction. For example, two of the faculty collaborated to write a textbook for the program. ECC depended on mentoring through a statewide integration network, and staff development at RCC could be described as a self-directed learning process, as the instructor, a highly experienced, dedicated teacher who was also the chair of English initiated integrated instruction on his own.

Where formal staff development was provided, no one form appeared to be more appropriate for one rather than another model of integration; rather, the approach to professional development seemed to reflect the culture and history of the different institutions. Possibly the most important function of professional development was to reduce faculty resistance, a frequently seen barrier to

integration. Models of professional development that permitted close contact between academic and occupational faculty, as at ACC, GCC, SCC, and LCC, seemed to have good potential to create favorable feelings about integrated instruction in general and the specific implementation in particular. On the other hand, off-site staff development, as in the case of ECC, did not seem effective in reducing the resistance to collaboration that arose in the implementation of a learning community.

In combination with the experience of cross-discipline interaction, the opportunity for faculty to play an active role in training seemed to enhance the effectiveness of professional development. Active involvement and the building of commitment were features of several approaches. In some cases (GCC, SCC, ACC), professional development leaders presented fundamental concepts and created an environment where participating faculty took leading roles in designing instruction according to the needs of their own disciplines and students. For example, professional development at SCC was conducted in the form of team meetings. In the informal but frequent meetings at LCC, all faculty played an equal role in program planning. In contrast, while ECC faculty collaborated across disciplines to make conference presentations, again taking an active role in training, the value of this experience may have been diminished by difficulties in relationships among faculty, coupled with resentment that the administration rather than faculty had initiated the effort.

Another common feature of staff development at ACC, GCC, SCC, and OCC was the length of time involved and the painstaking care with which curriculum was integrated. In all these cases, faculty met on a regular basis, sometimes weekly, for a semester or two, and in SCC's case, weekly meetings were held over a two-year period at 7:30 a.m. In all these cases, faculty or administrators who had initiated the integrated instruction were directly involved in professional development, attending the meetings, guiding discussions, providing theoretical background and practical suggestions, and facilitating collaboration between academic and occupational faculty. While writing-across-the-curriculum was being implemented at OCC, faculty from the English department were given released time to introduce other faculty to the concept. Released time also allowed for regular meetings and the creation of a faculty manual. At the time of the study, this effort had dwindled due to lack of leadership and loss of released time; as described above, the quality of the integration appeared to be diminishing through lack of attention.

An example of intensive faculty development was seen at GCC, where over a three-year period, an external grant provided one-semester course release

for twelve faculty and two leaders per year. Activities included a twice-weekly seminar, a weekly dinner seminar, faculty collaboration, and preparation of instructional materials. At the seminars, faculty demonstrated instructional strategies for integration and facilitated role-playing. Academic and occupational faculty observed each other's teaching.

Interviewees were highly enthusiastic about their experiences of professional development and in some cases attributed changes in the way they thought about teaching to participation in it. For example, a retail merchandising instructor began to shift towards student-centered approaches: "I used to lay out the information more—it's inborn in me." Similarly, a physical therapy instructor said that before attending the professional development seminars, she used to lecture more. Then, "I pulled back and let students solve their own problems. I had to have the ability to let go rather than just demonstrating. Some students can solve their own problems—I only interject when needed."

During the three-year period, a highly detailed staff development manual was produced, which the authors were attempting to publish at the time of the current study. When the three-year grant ended, the college continued to support professional development, although in a reduced form. Some released time was provided and every two years a series of workshops and dinners were provided to which all faculty were invited.

The model of professional development used at GCC had campus-wide impact. Eighty faculty participated in the initial three-year period, and at the time of the study, approximately 400 faculty had been involved in professional development in integrated instruction in one way or another. In addition, the college set up a center to promote active-learning principles and held an annual conference on this topic for college faculty in the region. This activity might serve to maintain campus enthusiasm and thus the quality of integration, which can wane with a reduction in professional development interactions, as was seen above in the case of OCC.

As in the examples of the retail merchandising and physical therapy instructors above, professional development in integrated instruction had the potential to change the approaches of general education faculty. A notable example was seen at SCC, where a social sciences instructor who had previously been skeptical about the value of career applications, became a strong advocate. In an interview, he enthusiastically described teamwork arrangements he had observed during site visits to local manufacturing plants, which he later used as examples in his classroom instruction.

DISCUSSION AND CONCLUSIONS

In this case study of academic-occupational integration in community colleges, curriculum and pedagogy seemed to vary more within than between models: the ways in which a model was implemented in the classroom appeared to be more a function of institutional and teacher preferences than of characteristics of the model.

The analytical framework developed for classroom observation and interview information had utility in describing variation among classrooms and holds promise for future research into academic-occupational integration. In particular, the framework may lend itself to quantitative research, which is sorely needed in this field. Taking the models and teaching variables together, there are 120 cells (5 models, 2 levels of strength, 3 levels of teacher style, 2 levels of literacy instruction, and 2 levels of curriculum clarity). Analyzing the effects on students and faculty by looking for interactions between variables would allow for substantiation of opinions expressed in current and previous research.

About two-thirds of the classes were integrating instruction in a strong manner while approximately one-third were integrating the material weakly. While the infused academic and hybrid models virtually dictated strong integration, the strength of integration in other models varied depending on the teacher and the institution. Course-linking did not ensure integration, as in Example 1.4, where each instructor taught with very little reference to the content and vocabulary of the companion course. Example 1.3 provides an illustration of linked courses in which a vocational instructor is integrating academic skills, although not from the target area (speech rather than social science), while the academic teacher is not integrating occupational content at all. Close monitoring of instruction via professional development approaches would probably serve to strengthen integration in such cases.

In contrast to expectations from previous work, only about a quarter of the teachers taught in a solely student-centered style, while over half used a combination of student- and teacher-centered approaches, considered by Cuban (1995) to be optimal. Further, there was an even spread of teacher- and student-centered classrooms across occupational and academic classrooms. While some educators advocate student-centered instruction, this approach may not be entirely appropriate for students with poor academic histories, who may need structured approaches. Some commentators have noted that structured instruction was provided year after year in students' previous educational endeavors and did not lead to high levels of achievement. While one wants to avoid prescribing more of the "same old thing," structured instruction can be

provided in a variety of ways and does not necessarily imply fragmentation of skills or the use of programmed learning. Rather, it is entirely possible to provide structure using authentic text and tasks, as in Examples 1.1, 1.3, and 2.1 in the current study.

The majority of instructors taught literacy and critical thinking skills implicitly, although most required students to use these skills. Approximately one-quarter of the instructors were integrating instruction in a strong manner but teaching literacy only implicitly. Our findings corroborate those of Achtenhagen & Grubb (1998), who are critical of the lack of explicit teaching in community colleges.

Curricular materials varied regarding how they referred to integrated instruction. Many of the syllabi made reference to integrated instruction, but it may not have been advantageous in some cases to mention integration in course descriptions, as it might have implied a "watering down" of instruction, jeopardizing transferability of courses to four-year institutions.

Several other findings were notable. First, it was difficult to find cases of integrated instruction involving occupational education. Second, faculty and administrators often expressed the rationale for integration in terms of students' need for academic skills, suggesting an overlap between integrated instruction and remedial education. Third, the benefits to students may not be attributable to integrated instruction alone, since other supports were available simultaneously. Finally, vigorous, site-based professional development is probably necessary to ensure implementation and maintenance of academic-occupational integration.

Difficulty of Finding Cases

Integrated instruction seems to be increasing on community college campuses, but we found occupational education to be seriously underrepresented in these efforts. Lack of communication across disciplines goes some of the way towards explaining this situation. Underlying the lack of communication may be a mutual mistrust on the part of occupational and general education faculty. Occupational faculty may see general education faculty as unsympathetic to occupational students because of their lack of academic preparation and as out of touch with the career interests and experiences of these students. At the same time, academic faculty are, on the whole, prepared by their own educational experiences to teach more traditional liberal arts and social science subjects and may see integration of occupational themes and application of basic skills as a lowering of standards. However, almost half the classrooms participating in this study were infused occupational courses which maintained transferability.

contrasting with the common view of integrated instruction as (low-level) applied academics.

Overlap of Academic-Occupational Integration and Remediation

Previous research has suggested several reasons why it is useful to integrate academic and occupational education: it is a reform of occupational education, broadening it beyond narrow skills instruction, and it reforms academic education by increasing its relevance to students' career interests and by importing teaching methods that are consonant with the learning styles of occupational education students. The impact on students of these outcomes is increased motivation to learn general education content, generalization of academic skills to career contexts, and development of a critical understanding of job practices.

College faculty and administrators expressed a wide range of reasons for integrating instruction at their institutions, from theoretical to pragmatic. By far, the most frequently mentioned reason for academic-occupational integration was its impact on student performance. In particular, students' need for literacy and critical thinking skills was cited over and over again.

Given this emphasis, we can ask whether academic-occupational education is a remedial intervention in disguise. A large proportion of community college students are hindered in accomplishing educational and career goals by basic skills problems. Students with these problems include recent high school graduates who had poor teaching, learning problems, or low motivation in the K-12 system; older students who have been away from formal education for a period of time; and immigrants from non-English-speaking countries. Where entry testing is mandated, students may work through remedial courses only to find that, when "testing out" of them, they still lack the skills they need to do well in content courses. Whether entry assessment is mandated or not, both occupational and general education instructors face large numbers of students who need to be taught with a special methodology in order to compensate for weaknesses in basic skills.

Two problems in traditional remedial education are the content-free nature of instruction and the damage to student self-esteem and college reputation resulting from the use of "deficit" language (Hull, 1997) to describe students' abilities. Remedial instruction is intended to develop skills that will be available at some later time rather than applied during the learning cycle. Students are often bored by this type of instruction and do not learn the skills at a deep enough level to generalize them when they need them later, for example, in the content classroom. In contrast, academic-occupational instruction teaches both the skills

and their application in the same time period, either in the same classroom (infused occupational, infused academic, and hybrid classes) or during the same semester (linked and clustered courses). Further, linking academic and occupational instruction presents literacy skills as another aspect of career preparation rather than as an attribute whose lack is a source of embarrassment. The shift in emphasis dignifies literacy instruction and circumvents deficit thinking.

While, in principle, integration and remediation can be seen as dual approaches to the same problem, the actual extent to which integrated instruction and remediation overlap is defined by the emphasis on literacy instruction in integrated classrooms. Some of the classes had goals much broader than academic skills development, but the majority included, along with occupational skills development, the improvement of reading, writing, listening, speaking, learning, and thinking skills. Some integrated classes were teaching literacy skills at a higher level than would be found in remedial classes and might be called "advanced remediation," but in others, the levels seemed similar. Research comparing practices and outcomes for integrated vs. remedial instruction would be valuable, given the current crisis in remedial instruction (McGrath & Spear, 1991; Dougherty, 1994).

Explaining Positive Effects

Despite a plethora of favorable comments, there was little quantitative evidence for the benefits of integrated instruction. An exception was ACC, where data had been collected in previous years on retention, grades, and the skipping of ESL levels, although lack of comparison groups limits the ability to draw conclusions. In addition, since the business course was the first occupational course to be linked at this institution, and this was in its first semester at the time of the study, no data were available regarding academic-occupational integration per se. In this qualitative case study we can only rely on the anecdotal evidence provided.

It is probable that, if academic-occupational instruction does turn out to be beneficial, its effects will be found to result from a variety of sources beyond the integration itself. Programs that were integrating instruction were also engaged in other practices that could exist independent of integrated instruction (e.g., the use of student-centered pedagogy, videotapes, or innovative instructional modules). In particular, many of the classes used a mixture of teacher- and student-centered instruction, which may be the optimal approach for the occupational education population.

Integrated instruction was accompanied by a variety of effective practices such as smaller class size, less use of lectures, more writing, supplementary

educational software or tutoring, weekly counseling groups, peer mentoring, faculty released time, and college recognition of participating faculty. Holding classes at the worksite, as at SCC, may have enhanced both student and teacher motivation. A strong labor market or effective job counseling that virtually ensures job placement on program completion could further enhance motivation. Faculty recognition and released time at several sites may have intensified the value of integrated instruction. In some cases, the teachers who were integrating instruction were campus leaders who had also been involved in other innovative efforts. They appeared to be excellent teachers who could successfully adopt a variety of pedagogical strategies, of which integration was only one.

Further research would be needed to establish which of these variables, separately or in combination, are responsible for the putative benefits of academic-occupational integration. While it would be difficult to disentangle separate effects, it appears that integration, as with other educational innovations, facilitates best practice. Positive effects could also result from novelty, leading to increased faculty motivation and enthusiasm for teaching.

Implications for Faculty Development

The success of academic-occupational integration seems to depend greatly on the quality of faculty development. Motivated instructors will usually be willing to tolerate an increase in workload if in return they experience increased intellectual satisfaction and enhanced professional relationships in the college. Many of the pitfalls and pressure points, such as difficulties in scheduling time for collaboration or misunderstandings across disciplines, can be detected by a professional development leader and addressed in the collegial setting of a faculty meeting. Further, a far-reaching faculty development effort, like those at ACC and GCC, may reduce overdependence on a single leader.

Faculty development planners will need to be sensitive to differing approaches to students' basic skills needs. Understandably, most occupational faculty do not see it as their responsibility to teach literacy skills. Objectives of integrated courses need to be negotiated among faculty. Agreement on the reasons for integration will be important if professional development and instructional practice are to be effective. The analysis of teaching practices, as well as a compendium of the benefits and drawbacks of integrated instruction, would provide the basis of an agenda for professional development. The way in which the training is provided will reflect the interests and strengths of the individual institutions that decide to integrate instruction.

APPENDIX:
EXAMPLES FROM CLASSROOM OBSERVATIONS

Strength of Integration

Strong Integration

Example 1.1. Materials of Industry (linked course)
(The instructor) is employed full time in industry and has taught at SCC for many years because he enjoys it. He assigns written reports tailored to what is expected in industry. He finds that the students have better skills than other students because they are taking English Composition at the same time. "These students are stronger - they could write a report on test equipment they could order for their company." ... He also reinforces speech skills that the students learned last semester... Students are required to write a 1,000 word research report (20% of grade) and make a 5-minute oral presentation on a material or group of materials. Written guidelines that he hands out stipulate that the report must contain a description of the material, origin/source of the material, chemical composition, how material is made, its uses in industry, advantages and disadvantages, environmental impact e.g. whether biodegradable, cost of material, supplier information, etc. The student must also submit an outline of the oral presentation. (Note: although I visited this classroom, there was little to see because the students were taking a midterm. This report is based on interview of the teacher, and assignments he showed me.)

Example 1.1. Composition I (linked course)
The purpose of the class, which met on the same night as the linked Materials of Industry class, was to develop writing and research skills using books, magazines and newspaper articles. These skills would be applied to a research project assigned in the Materials course. Most of the class time was spent at the library doing an assignment. I observed the first part of the class, during which the teacher gave out an abstract and told the students how to cite sources. He described "parenthetical documentation," using the author's last name and page number. He referred to the textbook regarding citing sources... After explaining how to cite sources the teacher gave a short lecture on plagiarism... Discussion followed... The teacher then talked about abstracts, and handed one out... The students then left the room to go to the library for the remainder of the class time. They were scheduled for a tour, and were going to select resources for the

Materials project... although the assignment was geared toward the linked course, the English teacher did not mention the other class during the time I was there.

Weak Integration

Example 1.2. Introduction to Speech (linked course)
The purpose of the class was for the students to make and listen to speeches on intercultural topics... There was no mention of office systems technology (the linked class), nor were any workplace concepts mentioned. There was no cross-referencing to the other (linked) class. This appeared to be a standard speech class and what made it integrated was the mechanical linkage with the other class. The occupational educators seem to use speech activities in their teaching but the speech teacher does not seem to be employing occupational concepts in this class...

I observed four speeches... The topics of the speeches were: (1) the experience a coworker (comptroller) described to the speaker about living in Germany for a year because of a company posting; (2) another speech about Germany, this time about cooking... (3) cults and churches, including the personal experience of a friend of the speaker; (4) how women are treated in Saudi Arabia.

Example 1.4, Introduction to Computers (linked course)
This class is linked with an ESL course... It is possible that not all were ESL students; 3-4 may have been African-American or from the Caribbean... The teacher began the class in a friendly but business-like manner, going straight to classroom business. Without any introduction to the subject matter, he asked the students to begin copying an elaborate chart spread out over the three panels of the chalkboard. During this time he took attendance, compiling the final roster, and asked students who wished to come up and show him that they had done their homework.... (Then) the instructor reviewed previous information, discussed new concepts, and then went over a homework assignment. Referring to the chart on the board, the instructor explicated concepts such as file management, opening a file, write-protect, file name, extension, save, and save as. While the instructor spoke, the majority of students took notes. They listened closely throughout the hour... Much of the lecture involved terminology such as equipment, hardware, device...The instructor frequently asked if there were any questions; in fact students asked very few questions during this observation. When I spoke with the instructor after class... he attributed lack of questioning to shyness. He stated that the students were very strong and might earn better grades than the students in the non-linked classes.

During the session, the instructor did not mention anything specifically related to the course-linking although he stated that many students were ESL. At one point, he said, "I know many students in here are ESL and may want to ask about terminology." However, although he had a congenial manner, acknowledged the students' language status, and seemed genuinely interested in inviting students to ask questions, he tended to speak rather quickly so that students with lower English language proficiency may have had some difficulty following what he said. At times some of the students had quizzical expressions on their faces. It was not clear whether the students were understanding because the instructor rarely asked substantive questions to check comprehension. Most of the questions related to material being reviewed, rather than new concepts.

Teacher Style

Mixed Classroom

Example 3.2, Comprehensive Nursing Care II (infused occupational course)
The classroom was arranged in rows of desk-chairs. The ambiance was serious but friendly. Students often conferred with each other, and the instructor had an amiable manner. Throughout the class a large quantity of content was delivered and discussed. The session was devoted to topics including problems with labor, delivery, premature rupture of membranes, stressors for different conditions, and high risk obstetrics.

Students initially sat in rows and worked independently on an assignment, and then formed three circles to complete it. The activity involved teamwork with brainstorming. Students had notes they had taken in a previous class, and for homework. Members of each group were given a different sheet of paper with an assignment to resolve a problem by formulating a nursing diagnosis (identify goal, identify and prioritize interventions). A different condition appeared on each handout for example, "potential reproductive tract and fetal infection r/t portal of entry 2o PROM" (premature rupture of membrane). The students had to fill in the goal and interventions. The students worked independently for approximately 10 minutes and then formed groups to discuss what they had written on their sheets, and to decide on the order of the material (priorities). The groups met for approximately 20 minutes. During their discussions they referred to their notebooks. The instructor circulated among groups asking questions, e.g. is the woman at home or in the hospital; have you identified your priorities yet.

Each group chose a spokesperson who went to the board to write the group's material, and the rest of the class returned to the rows of chairs. The instructor had reproduced the assignment on three panels of the blackboard; the

three recorders wrote simultaneously. When they were finished the instructor led a whole-class discussion of each problem. The students were asked if they agreed or disagreed about each.

Example: group 2 which I had observed, which worked on pre-term labor. Goal: Pt will deliver viable baby, fetus will remain free of injury. Priority interventions. Report any cramping. The whole class was asked "What do you think of that as a first intervention?" They were asked to raise their hands to say whether they agreed or disagreed. The instructor asked for a rationale for reporting cramping. Example: you have to stop the contractions. The instructor guided them through a discussion and indicated that the answer was wrong. The students had confused the goal with the assessment. The assessment is not the first part of the plan, the action is (reporting cramping would be part of assessment). The correct answer was bed rest. The instructor corrected students as they suggested answers, helped them think about this issue and draw conclusions about goals and priority interventions for the different problems. Many of the students were highly involved and attentive during this discussion, consulting their notes, offering answers and asking questions. A small minority of students were not as involved.

The instructor responded to questions and filled out the information. Example: when discussing the mother's fear, one needs to say "fear of something" e.g. fetal demise, anticipatory bereavement. The instructor's questions included: What's the key indicator of the infection? What's the primary problem? What's the next problem? Do you think that's a high priority? Because? When an answer was incorrect, the instructor addressed the student respectfully, e.g. "That would seem logical but that's not the answer."

Following this activity, the instructor delivered a lecture with overheads. One of the topics of the lecture was hemmorhaging in pregnancy... The instructor asked questions during the lecture, including a "bonus" question regarding sending home of a patient with a particular RH status. Assessments were elicited from the students... Students took notes throughout the lecture.

The instructor asked questions during the lecture and called on all students for answers. Examples: How would we diagnose this? What do you do for a hemmorhage? The latter led to a discussion of maintenance of fluid volume, otherwise patient will go into shock and die. Only a few students understood this...

In the middle of the lecture, the students were asked to take a few minutes and write 3-4 interventions for fetal bleeding, and "put a star next to the priority." The instructor asked the students what questions they had. A few asked, leading to class discussion. Example: if D & C is less traumatizing, why don't they...

Based on students' answers, it seemed that not all understood the material. The instructor took them through steps in thinking about the material and helped them draw conclusions through discussion. A few students had no difficulty and in fact one student made an observation that the instructor thought was particularly perceptive; she gave the student a sticker when acknowledging this.

Student-Centered Classroom

Example 1.4, English as a Second Language (linked course).
Two tutors were present in the classroom. Students began by sitting in rows of chairs, soon moved to two circles, as directed by instructor... The instructor began by asking for students' homework. Very few had done it. Then the instructor asked the students to move into two groups to work with tutors. While the groups were working, the instructor met with individual students to review papers they had written. In the groups, the students worked on The Pearl, by John Steinbeck. They each had a worksheet that listed comprehension questions. The tutor read each question, and a student answered... The teacher did not state the purpose to the students but the purpose appeared to be language practice and reading comprehension. Many of the students answered the tutors' questions although they rarely asked any of their own except, "Could you repeat?" There was much conversation in the classroom although a few remained unengaged throughout. A few spent much time writing - it was not clear whether this was related to the class. One seemed to be filling out a form. The atmosphere was different from the computer class in which students sat largely silent while the instructor lectured. The tutors were very friendly and involved. Two of the students worked together while the others in the group worked with the teacher. Many of the students seemed to have reasonable spoken English proficiency although they made grammatical errors.

Teacher-Centered Classroom

Example 3.13, Special Radiologic Procedures (infused occupational course)
The instructor begins the class by regrouping the students and informing them of what they need to do, future classes, upcoming discussions, and so forth... For the next half hour, a student... presented a topic related to radiologic technology. During the next 25 minutes, students looked at slides. During the remaining 5 to 10 minutes, students were given an in-class practice test consisting of vocabulary matching. The work was discussed in class.... the method used was primarily expository in nature. Both instructor and student presenter used this method of instruction. There was no group learning involved... The presenter was reading off

his paper, without any sense of tone and interest in the topic being discussed. The students sitting seemed to be listening, but not too motivated... Students rarely asked questions in class. Approximately 20 minutes into the class session, a female student asks the male student presenter about a content-oriented issue. The presenter clarifies the misunderstanding for the student. Approximately 21 minutes in to the class session, the instructor asks the presenter about "time interval mode obstruction." In response, the presenter simply reviews "time interval mode obstruction" by repeating the material in a slower fashion.

Explicitness of Literacy Instruction

Explicit Instruction

Example 3.4, Retail Merchandising (infused occupational course)

...covers fundamentals of merchandising, markup and markdown, stock turnover, stock sales ratio, retail method of inventory, open-to-buy, unit stock control, merchandise plan, and merchandising and the computer. There is a heavy math component. On Wednesdays, the class is based on homework the students have done, and discussing how problems are to be set up. On Fridays (day visited), this information is applied and the students work at the computers. The instructor has the students apply all the problems in the textbook to spreadsheets. (All the problems require math.)

The class focused on application of math problems discussed in a prior class. The students worked at the computer on spreadsheets based on purchase orders. Seven of the 12 enrolled students were present. All students did the same assignments but instruction was individualized at the computer. Students initially sat in rows of desk chairs for some introductory remarks and soon moved to computers at the back of the room. The assignment was written on the board: Problem #55, p. 40, print with and without formulas, and purchase order. There were 10 computers. The instructional task was to set up a spreadsheet on the computer based on 3 assigned problems in the textbook. The students used the Excel program, which they had learned early in the course. Setting up spreadsheets is a weekly activity in this class.

The teacher explained to me that the students produce two sheets, one containing the figures and the other containing the equations they used to get the figures...

The students asked the teacher questions as he circulated from computer to computer.... Most of their questions were about layout. At one point, the teacher told them to "get the data in and then make it pretty."

The students printed their work and showed the printouts to the teacher. There was some discussion with the various students about these printouts. All discussions were individualized in this session.

The students were deeply involved in their work and at the end of the class had to be asked to stop so they wouldn't be late to their next class.

Example 5.3, Clinical Skills Lab (hybrid)

This class is the lab section to... Principles of Patient Care, and must be taken concurrently with the latter. However, it is not linked with it.... The classroom (contained) seven beds, a sink, a small teacher's desk, and chalkboard. There were mannequins on each bed (each mannequin incidentally representing a particular ethnic background). These mannequins were used for the teacher's demonstration or for a student's "return demonstration" of a particular medical or health-related activity that would be considered applicable in the work place... [a return demonstration is where the teacher has demonstrated a task and the student shows the teacher how it is done. At this time, the teacher provides feedback on the task, as well as use of vocabulary and language skills]

Students began working in groups as they arrived and after brief demonstrations the instructor would either have a student do a return demonstration, or students would work together on the English exercises and learning new hands-on material from the workbook... So the ESL component was quite apparent as a feature of the course. The topic of the session that I attended concerned the urinary system and urinary diseases.... The specific areas of integration include the ESL component as well as mathematics, particularly the ways in which health care related employees deal with measuring and explaining information...

Students also demonstrated the ability to listen carefully to the teacher's instructions. Writing only involved the answering of workbook questions, and homework exercises.

Implicit Instruction

Example 3.1, Physical Therapy Assistant I (infused occupational course)

The physical setting was a large room with beds which doubled as desks at the beginning of the class. There was equipment in the room including sink, wheelchairs, crutches, scales, and some other appliances...

The topic was transferring patients from bed to wheelchair. Concepts included various types of weight-bearing (e.g. toe-touch, eggshell). Other concepts included commands to patients. All concepts were highly practical.

Instruction emphasized demonstration, with lecture interspersed. The instructor began with a fifteen-minute lecture, using the blackboard. After the lecture, the students gathered around the teacher and a student who had volunteered to role play a patient, for a demonstration. The demonstration was case-based, as were subsequent practice activities. The case for the demonstration was a patient with CVA and left-sided paralysis. Physical assistants had to help the patient sit up in bed using a rolling procedure. The patient had to use her strong side as a pivot. The patient had to be lifted to the wheelchair utilizing the patient's center of gravity. The instructor demonstrated toe-touch weight bearing and other aspects of transfer. She also demonstrated the use of a special belt that patients wore while being transferred....

There was some evidence of critical thinking. The teacher asked the students to assess the role-play patient's weight-bearing status and asked whether they were allowed to stand on their feet. "What weight-bearing is possible?" Later in the discussion the issue of decision-making came up, and the instructor stated, "Never second-guess the doctor's decision."

There was some writing activity, when students took notes from the lecture at the beginning of class. Also, the students brought in homework they had done, completed charts and brief reports on patients in real settings. (While critical thinking and writing were practiced in class, there was no instruction in how to perform these skills - the teaching was implicit.)

Clarity of Integration

Statements in Syllabi

Example 1.2, Keyboarding II: Formatting (linked course)
"Through the Center for Integration (name changed), formatting and word processing will be integrated with Business English and Communications, Customer Service, Speech, and Workplace Projects."

Example 2.1, Introduction to Health Care: Nursing, Health Care Ethics, and College Composition I (learning community)

Accompanying the syllabus was a calendar showing schedules for the three classes on one sheet. The learning community was described: "This unique course gets you started by offering you the following: integrated learning -- ideas and assignments are shared and /or coordinated to maximize learning and minimize stress; convenience -- classes meet in blocks on two days of the week in the same classroom; community -- students work, study and learn together, developing close personal ties and future professional contacts; academic

success -- learning community students achieve higher grade points than students in other courses."

Example 3.12, Image Production and Evaluation II (infused occupational)
The Evaluation Procedure section states that writing assignments are required, and includes the following statement: "Assignments that are poorly written will not be accepted AND the student will be required to seek help from the OCC (name changed) writing lab to revise the assignment before resubmitting their work." Attached to the syllabus is a two-page set of writing guidelines, that starts, "(course number) has been designated as a writing emphasis course to assist the student in fulfilling the OCC general education requirements. A variety of short writing assignments, relevant to subject content, have been designed to help improve the writing skills of the student."

Example 4.2, ESL for Allied Health (infused academic)
Course description states, "This course is designed to reinforce the content of the Principles of Patient Care and of Clinical Skills Lab. Oral communication, pronunciation and practical 'on the job' English skills are taught using vocabulary encountered in the health care setting. Basic grammar structures and writing skills are also practiced, all within the context of the health care setting."

Example 4.3, Communications II (infused academic course)
Course description states: "Examine communication arts as they related to the automotive technician: reading, writing, speaking, and listening... Goal: "To develop communication skills which apply to the Automotive workplace." 7 objectives are listed including: "5. To solve automotive problems through written responses to workplace case studies."

Example 5.1, Creative Problem Solving in Business (hybrid course)
Course description includes statement: "Various forms of active learning techniques will be employed to develop and improve those skills viewed by the business community as essential for success in the workplace. These skills include the ability to community effectively, work in teams/ groups to solve business problems, research information, and think creatively and critically in solving business problems." Learning objectives include: "1. To assist students in developing their ability to communicate effectively in both oral and written forms within the business environment. 2. To assist students in developing their ability to solve business problems through rational reasoning and creative and critical thinking activities. 3. To assist students in developing their ability to work effectively in groups/ teams in solving business problems."

REFERENCES

Achtenhagen, F., & Grubb, W. N. (in press). Vocational and occupational education: Pedagogical complexity, institutional indifference. In V. Richardson (Ed.), Handbook of research on teaching, 4th ed. Washington, DC: American Educational Research Association.

Adelman, C. (1996, October 4). The truth about remedial work: It's more complex than windy rhetoric and simple solutions suggest. The Chronicle of Higher Education, p. A56.

Auster, C. J., & MacRone, M. (1994). The classroom as negotiated social setting: An empirical study of the effects of faculty members' behavior on students' participation. Teaching Sociology, 22, 289–300.

Badway, N., & Grubb, W. N. (1997). A sourcebook for reshaping the community college: Curriculum integration and the multiple domains of career preparation (Vols. 1–2, MDS-782). Berkeley, CA: National Center for Research in Vocational Education.

Bailey, T. R. (1995). The integration of work and school. In W. N. Grubb (Ed.), Education through occupations in American high schools Vol. 1, pp. 26–38). New York: Teachers College Press.

Bailey, T. R., & Merritt, D. (1997). Industry skill standards and education reform. American Journal of Education, 105, 401–436.

Bayer, A. E., & Braxton, J. M. (1998). The normative structure of community college teaching. Journal of Higher Education, 69, 187–205.

Bean, T. W., & Readence, J. (1989). Content area reading: Current state of the art. In D. Lapp, J. Flood, & N. Farnan (Eds.), Content area reading and learning: Instructional strategies (pp. 14–23). Englewood Cliffs, NJ: Prentice-Hall.

Bloom, B. S. (1956). Taxonomy of educational objectives. New York: Longman.

Bragg, D. D., & Layton, J. D. (1995). Tech prep implementation in the United States: The once and future role of community colleges. Community College Review, 22 (4), 3–16.

Bransford, J. D. (1979). Human cognition: Learning, understanding, and remembering. Belmont, CA: Wadsworth.

Brewer, D., & Gray, M. (1997). Connecting college and community in the new economy? An analysis of community college faculty-labor market linkages (MDS-1084). Berkeley, CA: National Center for Research in Vocational Education.

Brewer, J. A. (1996). Integrating academic and vocational education: An investigation of the attitudes and curricular values of administrators and faculty in the Wisconsin Technical College System. Journal of Vocational Education Research, 21 (1), 5–33.

Brown, R., Pressley, M., Van Meter, P., & Schuder, T. (1996). A quasi-experimental validation of transactional strategies instruction with low achieving second graders. Journal of Educational Psychology, 88, (1), 18–37.

Bruner, J. (1963). The process of education. New York: Vintage.

Callan, P. M. (1997). Stewards of opportunity: America's public community colleges. Daedalus, 126, 95–112.

Cohen, A. M., & Brawer, F. B. (1996). The American community college, 3rd ed. San Francisco: Jossey-Bass.

Cohen, D. K. (1990). A revolution in one classroom: The case of Mrs. Oublier. Educational Evaluation and Policy Analysis, 12, 311–329.

Cordova, D., & Lepper, M. R. (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. Journal of Educational Psychology, 88, 715–730.

Cuban, L. (1995). How teachers taught: Constancy and change in American classrooms, 1880–1990 (2nd ed.) New York: Teachers College Press.

Detterman, D. K. (1993). The case for the prosecution: Transfer as an epiphenomenon. In D. K. Detterman & R. J. Sternberg (Eds.), Transfer on trial (pp. 1–24). Norwood, NJ: Ablex.

Dewey, J. (1916). Democracy and education. New York: Free Press.

Dougherty, K. (1994). The contradictory college: The conflicting origins, impacts, and futures of the community college. Albany: State University of New York Press.

Dressel, P., & Marcus, D. (1982). Teaching and learning in college. San Francisco: Jossey-Bass.

Eaton, J. (1994). Strengthening collegiate education in community colleges. San Francisco, CA: Jossey-Bass.

Foster-Havercamp, M. (1988). Twin strategies for reading improvement. Vocational Education Journal, 63 (2), 36–37.

Freire, P. (1972). Pedagogy of the oppressed. London: Penguin.

Gabelnick, F., MacGregor, J., Matthews, R. S., & Smith, B. L. (1990). Learning communities: Creating connections among students, faculty, and disciplines (New Directions for Teaching and Learning 41). San Francisco: Jossey-Bass.

Good, T. L., & Brophy, J. E. (1987). Looking in classrooms (4th ed.). New York: Harper & Row.

Grubb, W. N. (1996). Working in the middle: Strengthening education and training for the mid-skilled labor force. San Francisco: Jossey-Bass.

Grubb, W. N. (1998, January). From black box to Pandora's box: Evaluating remedial/developmental education. Paper presented at the Conference on Replacing Remediation in Higher Education, Palo Alto, CA.

Grubb, W. N., Badway, N., Bell, D., & Kraskouskas, E. (1996). Community college innovations in workforce preparation: Curriculum integration and tech-prep. Berkeley, CA: League for Innovation in the Community College, National Center for Research in Vocational Education, and National Council for Occupational Education.

Grubb, W. N., & Kraskouskas, E. (1992). A time to every purpose: Integrating academic and occupation in community colleges and technical institutes (MDS-251). Berkeley, CA: National Center for Research in Vocational Education.

Harris, K. R., Graham, S., & Deshler, D. (1998). Teaching every child every day: Learning in diverse schools and classrooms. Cambridge, MA: Brookline Books.

Howard, J., & Obetz, W. S. (1996). Using the NALS to characterize the literacy of community college graduates. Journal of Adolescent and Adult Literacy, 29 (6), 462–467.

Huffman, D. (1996). Effect of explicit problem-solving instruction on high school students' problem-solving performance and conceptual understanding of physics. Journal of Research in Science Teaching, 34(6), 551–570.

Hull, G. (1997). Hearing other voices: A critical assessment of popular views on literacy and work. In G. Hull (Ed.). Changing work, changing workers (pp. 3–39). Albany: State University of New York Press.

Illinois Task Force on Integration (1997). Academic and occupational integration. Springfield, IL: Illinois Community College Board.

Johnson, L. F. (1996). Developmental performance as a predictor of academic success in entry-level mathematics. Community College Journal of Research and Practice, 20, 333–344.

King-Sears, M. (1997). Best academic practices for inclusive classrooms. Focus on Exceptional Children, 29, 1–22.

Lattuca, L. R., & Stark, J. S. (1994). Will disciplinary perspectives impede curricular reform? Journal of Higher Education, 65, 401–426.

McCabe, R. H. (1988). The educational program of the American community college: A transition. In J. S. Eaton (Ed.), Colleges of choice. New York: ACE/Macmillan.

McGrath, D., & Spear, M. B. (1991). The academic crisis of the community college. Albany: State University of New York Press.

Meltzer, L. J. (1993). Strategy use in students with learning disabilities: The challenge of assessment. In L. J. Meltzer (Ed.), Strategy assessment and instruction for students with learning disabilities (pp. 93–139). Austin, TX: Pro-Ed.

Mikulecky, L. (1998). Adjusting school writing curricula to reflect expanded workplace writing. In M. S. Garay & S. A. Bernhardt (Eds.), Expanding literacies (pp. 179–200). Albany: State University of New York Press.

Mikulecky, L. (1982). Job literacy: The relationship between school preparation and workplace actuality. Reading Research Quarterly, 17, 400–419.

Mikulecky, L., & Drew, R. (1991). Basic skills in the workplace. In R. Barr, Kamil, M. L., Mosenthal, B. B. & Pearson, P. D. (Eds.), Handbook of reading research. (Vol. 2, pp. 669–689). New York: Longman.

Murnane, R. J., & Levy, F. (1996). Teaching the new basic skills: Principles for educating children to thrive in a changing economy. New York: Free Press.

Nunn, C. E. (1996). Discussion in the college classroom. Journal of Higher Education, 67, 243–266.

O'Banion, T. (1994). Teaching and learning: A mandate for the 90s. Community College Journal, 64, 21–25.

Perin, D. (1997) Workplace literacy assessment. Dyslexia, 3, 190–200.

Perin, D. (1998). IEE technical report

Perry, R. P., Menec, V. H., & Struthers, C. W. (1996). Student motivation from the teacher's perspective. In R. J. Menges & M. Weimer (Eds.), Teaching on solid ground: Using scholarship to improve practice (pp. 75–101). San Francisco: Jossey-Bass.

Peverly, S. T., & Kitzen, K. R. (1998). Curriculum-based assessment of reading skills: Considerations and caveats for school psychologists. Psychology in the Schools, 35, 29–47.

Readence, J. E., Bean, T. W., & Baldwin, R. S. (1995). Content area literacy: An integrated approach (5th ed.). Dubuque, IA: Kendall Hunt.

Resnick, L. (1989). Introduction. In L. Resnick (Ed.), Knowing, learning, and instruction: Essays in honor of Robert Glaser (pp. 1–24). Hillsdale, NJ: Erlbaum.

Richardson, R. C., & Elliot, D. B. (1994). Improving opportunities for underprepared students. In T. O'Banion (Ed.), Teaching and learning in the community college (pp. 97–114). Washington, DC: Community College Press.

Rosenshine, B., & Stevens, R. (1986). Teaching functions. In M. C. Wittrock (Ed.), The handbook of research on teaching (pp. 376–391). New York: Macmillan.

Roueche, J. E., & Roueche, S. D. (1993). Between a rock and a hard place. Washington, DC: American Association of Community Colleges

Sauer, B. (1998). Workers at risk: Or, how you read and write might save your life. In M. S. Garay & S. A. Bernhardt (Eds.), Expanding literacies: English teaching and the next workplace (pp. 153–178). Albany: State University of New York Press.

SCANS (Secretary's Commission on Achieving Necessary Skills). (1991). What work requires of schools: A SCANS report for America 2000. Washington, DC: U.S. Department of Labor.

Shaw, K. M. (1997). Remedial education as ideological battleground: Emerging remedial education policies in the community college. Education Evaluation and Policy Analysis, 19, 284–296.

Stake, R. (1995) The art of case study research. Thousand Oaks, CA: Sage.

Stasz, C. (1997). Designing classrooms that work: Conception and pilot study (MDS-904). Berkeley, CA: National Center for Research in Vocational Education.

Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. Journal of Higher Education, 68, 599–623.

Thorndike, E. L., & Woodworth, R. S. (1901). The influence of improvement in one mental function upon the efficiency of other functions. Psychological Review, 8, 247–261.

Washington Center News. (1996, Fall). [Washington Center for Improving the Quality of Undergraduate Education, Evergreen State College, Olympia, WA.], p. 26.

Weinstein, C. E., & Hume, L. M. (1998). Study strategies for lifelong learning. Washington, DC: American Psychological Association.

Yin, R. K. (1994). Case study research: Design and methods (2nd ed.). Thousand Oaks, CA: Sage.

Zeitlin, A. N., & Markus, T. C. (1996). Should remediation be mandatory in the community college? Community Review, 14, 27–33.